ISICSB

Iowa Statewide Interoperable Communications System Board

Shared Systems Study Group

Report of Findings

September 2020

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Preface

The Iowa Statewide Interoperable Communications System Board (ISICSB) would like to thank the members of the Shared Systems Study Group (SSSG) for their time in researching and drafting this document. The ISICSB recognizes that the production of a document of this scale and scope requires a significant amount of time and effort and appreciates the participation of every member that was involved.

Study Group Type	Name	Agency	Disciplines Covered	ISICS User Level
Control Station User – Large Agency	Jason Study	Pottawattamie County Sheriff's Office	Law Enforcement; Communications Center	Level 1
Level 3 or 4 User of ISICS	Jason Hoffman	Carroll County Sheriff's Office	Law Enforcement; Communications Center	Level 4
	Brian Hamman	Montgomery County EMA	Emergency Management; Communications Center	Level 4
	Sheriff Chad Leonard	Dallas County Sheriff's Office	Law Enforcement	Level 4
Level 1 User	Chris Jasper	Muscatine County Sheriff's Office	Law Enforcement; Communications Center	Level 1
	Chief Dennis McDaniel	Johnston PD	Law Enforcement	Level 1
	Curt Woten	Blakesburg Fire Department	Volunteer Fire/EMS	Level 1
Control Station User - Small Agency	Sheriff Gary Anderson	Appanoose County Sheriff's Office	Law Enforcement; Communications Center	Level 1 (PSAP)
VHF User	Dan Rammelsberg	Benton County	Fire/EMS	Level 2
	Sgt. Corey Trucke	Ida County Sheriff's Office	Law Enforcement; EMS; Communications Center	Level 2
	Sheriff Keith Davis	Wayne County Sheriff's Office	Law Enforcement	Level 1 (PSAP)
ISICS System Administrator	Scott Richardson	Iowa Dept. of Public Safety	Communications	N/A
SARA User	Sheriff Rob Rotter	Iowa County Sheriff's Office	Law Enforcement	Level 1
SWIC	Chris Maiers	ISICSB	Communications	N/A
Deputy SWIC	Chief Curtis "Wally" Walser	Cedar Rapids Fire Department	Fire; EMS; Communications	Level 2

Executive Summary

The Iowa Statewide Interoperable Communications System Board (ISICSB) organized the ad-hoc formation of the Shared Systems Study Group (SSSG) in February 2020 to revisit the findings presented in the staff study *ISSI Committee Recommendation for Iowa Statewide Interoperable Communication System (ISICS) use of ISSI connection* that led to the ISICSB adopting a technical recommendation not to utilize an ISSI in August of 2017[1].

The SSSG met regularly beginning in March 2020 and discussed what possible achievable goals of an inter- radio frequency subsystem interface (ISSI) deployment could be, the benefactors, associated start-up and on-going costs, maintenance considerations, and operational characteristics. APCO Project 25 (P25) standards engineers from Motorola and Harris gave testimony on how an ISSI can work with respect to standards. Engineers from other states with similar deployments (e.g. Motorola statewide system to larger Harris system) presented their experiences on what did and did not work, and what aspects of ISSI technology still have issues. The SSSG recognized and concluded that the deployment of an ISSI is not plug-and-play.

Given the potentially large start-up and on-going costs associated with an ISSI and what Iowa public safety stakeholders could reasonably expect for functionality, the ISSI still appears to be an expensive proposition with a relatively small return on investment that will not uniformly benefit all public safety agencies in Iowa. The main concern of the group was voice interoperability, and other means undertaken can accomplish voice interoperability for substantially lower start-up and on-going costs.

In addition, the lack of various features such as automatic roaming for subscriber radios between Motorola and Harris infrastructure present no fundamental operational gain for end users since a manually channel/talkgroup change is necessary to access the other system.

Furthermore, the ISSI will not present benefit to any stakeholders utilizing conventional VHF networks. These VHF networks are prominent in Iowa.

The SSSG concludes and recommends that the ISICSB discontinue discussions of an ISSI deployment at this time in Iowa for LMR-to-LMR connections. The ISICSB and SWIC should maintain awareness of evolutions of the ISSI and make recommendations as necessary.

The SSSG also recommends that programs and new funding be developed to assist local agencies with procuring and deploying equipment capable of connecting to ISICS within the public safety communications center and in the field via mobile and portable subscriber radios. This would be a more prudent use of tax payer monies. The funding mechanisms should be new and not siphon monies from programs currently in existence. Any program should also include training for local agencies.

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[1] August 2017 ISICSB Meeting Minutes: https://isicsb.iowa.gov/sites/default/files/meetings/minutes/2017-08/20170810-boardmeetingminutes_final_draft_cm.pdf

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Glossary of Terms/Acronym List

APCO – Association of Public-Safety Communications Officials

ATIS – Alliance for Telecommunications Industry Solutions.

CAP – Compliance Assessment Program. A program run by the federal Department of Homeland Security that tests radios and other equipment for compliance with P25 standards.

Consolette/control station – A mobile radio with additional features that can be integrated into dispatch consoles for communication on a LMR network

CSSI – Console Subsystem Interface. A connection that allows for a console to connect to the P25 system core of a different system manufacturer.

DSR – Dynamic System Resiliency. A system feature of ISICS that allows the radio system to recover from a technical problem by rerouting specific functions such as radio traffic. The end users typically do not notice this.

FirstNet – A LTE network built by AT&T that is dedicated to public safety agencies' mobile broadband data needs.

FTE – Full-Time Employees

FPIC – Federal Partnership for Interoperable Communications. A federal group of "…more than 200 Federal, State, local, tribal and territorial public safety representatives from over 45 federal agencies, as well as representatives from state, tribal, territorial and local entities, focusing on improving interoperability among the public safety community at all levels of government and addressing common public safety related communications issues."[2]

ISICS – Iowa Statewide Interoperable Communications System. The statewide interoperable P25 Phase II LMR system in Iowa that operates in 700/800 MHz.

ISICSB – Iowa Statewide Interoperable Communications System Board. The board that creates and maintains interoperable policy in Iowa defined in Iowa Code sections 80.28 and 80.29. This board is also tasked with the maintenance of policy for the ISICSB.

ISSDA – Iowa State Sheriffs and Deputies Association

ISSI – Inter-Radio Frequency Subsystem Interface. A connection that allows for an interconnection between P25 LMR system cores that is highly configuration dependent.

JLMRLTE – Joint LMR/LTE standards group under ATIS. This group is drafting standards for future connections between LMR and LTE systems.

LMR – Land Mobile Radio

LTE – Long Term Evolution. A cellular data standard and protocol

NCSWIC – National Council of Statewide Interoperability Coordinators. A group that supports the statewide interoperability coordinators "…by developing products and services to assist them with leveraging their relationships, professional knowledge, and experience with public safety partners involved in interoperable communications at all levels of government."[3]

NY MTA – New York Metro Transit Authority

P25 – APCO Project 25. A set of standards for digital public safety LMR systems. These standards apply to conventional and trunked radio systems. The standards outline how some features and functions are configured in radios to enhance interoperability.[4]

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[2] https://www.cisa.gov/safecom/fpic-membership
[3] https://www.cisa.gov/safecom/NCSWIC
[4] https://www.apcointl.org/spectrum-management/spectrum-management-resources/interoperability/p25/

P25 Phase I Frequency Division Multiple Access (FDMA) – A type of operating parameters on a trunked radio system. Under this configuration, voice channel talkpaths are dynamically assigned to radio users when they activate a radio and the talkgroup they are using. The channel talkpath is automatically released when the transmission concludes.[5]

P25 Phase II Time Division Multiple Access (TDMA) – A type of operating parameters on a trunked radio system. Under this configuration, voice channel talkpaths are dynamically assigned to radio users when they activate a radio and the talkgroup they are using. Each voice channel can fit two talkpaths which doubles the capacity of FDMA. The channel talkpath is automatically released when the transmission concludes.[5]

PSAP – Public Safety Answering Point

RFI – Request for Information

RFP – Request for Proposal

SAFECOM – A federal group under the Cybersecurity and Infrastructure Security Agency that "…works to improve emergency response providers' inter-jurisdictional and interdisciplinary emergency communications interoperability across local, regional, tribal, state, territorial, international borders, and with federal government entities."[6]

SSSG – Shared Systems Study Group

SME – Subject matter experts

TIA – Telecommunications Industry Association

TR-8 – The set of engineering committees within TIA that draft and maintain standards for P25 radios and infrastructure

VHF – Very High Frequency. Falls in the range of 150 – 174 MHz and is non-contiguous.[7] Many of the local LMR systems in Iowa utilize VHF conventional configurations

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[5] https://www.cisa.gov/sites/default/files/publications/08-28-2020_P25-SPUN_FINAL_508c_0.pdf

[6] https://www.cisa.gov/safecom

[7] https://www.fcc.gov/public-safety/public-safety-and-homeland-security/policy-and-licensing-division/public-safety-spectrum

I.   Introduction

The Iowa Statewide Interoperable Communications System (ISICS) was first laid out in the *Iowa Statewide Interoperable Communications System Master Plan[8]* published in September 2009. The Iowa Statewide Interoperable Communications System Board (ISICSB) released a Request for Information (RFI) in late-2011 and a Request for Proposal (RFP) in late-2013. Bids were received from L3-Harris, Motorola Solutions and RACOM. The contract for the Iowa Statewide Interoperable Communications System (ISICS) was signed in late-2015.

II.   Past Action

Within the original contract for deployment of the ISICS platform a single inter radio frequency subsystem interface (ISSI) was included. However, concern grew about the feasibility of successfully deploying managing and maintaining an ISSI connection grew as reports from across the United States grew of failed deployments or those that did not meet user needs or expectations.

The ISICSB commissioned an ISSI Committee and hosted an ISSI Summit in March of 2017 that included participation from Iowa stakeholders and representatives from the Telecommunications Industry Association (TIA) TR-8, Project 25 (P25) Standards committee chairs. Several issues worthy of note emerged during this summit. These issues were summarized in a staff study memorandum entitled *ISSI Committee Recommendation for Iowa Statewide Interoperable Communication System (ISICS) use of ISSI connection* included in Appendix A.

This staff study was discussed within the Technology Committee of the ISICSB and brought to the ISICSB for discussion. The ISICSB adopted a technical recommendation to not use the ISSI in August 2017 during the regularly scheduled ISICSB meeting.

The resulting contract credit for the never delivered or installed ISSI was utilized for consolettes for local public safety answering points (PSAPs) that did not have connection to the ISICS platform for interoperability. In addition to contract credit, additional consolettes and control stations were purchased with pass-through grant money to get other PSAPs connected to the ISICS platform. This program has proven successful with mobile and stationary planned and unplanned events.

In late-2019, the Iowa State Sheriffs and Deputies Association (ISSDA) requested the ISICSB revisit the decision on a possible ISSI implementation and installation. At the January 2020 ISICSB meeting, ISICSB Chair Lt. Tom Lampe commissioned an ad-hoc Shared Systems Study Group (SSSG)[9]. Chair Lampe tasked the SSSG with several items outlined in the slides presented to the ISICSB[10]. The members of the SSSG had to fit several categories that spanned the LMR landscape in Iowa—trunked, conventional, analog, digital, 700/800 MHz, and VHF. They also had to represent several disciplines such as law enforcement, firefighting, emergency medical services, communications, emergency management, and LMR system administration.

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[8] https://isicsb.iowa.gov/sites/default/files/documents/2016/12/isics_master_plan_v1_11-08-2009.pdf
[9] https://isicsb.iowa.gov/sites/default/files/meetings/minutes/2020-02/2020-01-09_isicsb_meeting_minutes_final.pdf
[10] https://isicsb.iowa.gov/sites/default/files/documents/2020/01/shared_systems_study_group.pdf

The SSSG began meeting in March of 2020 and met regularly with the exception of April 2020 due to the response to the COVID-19 pandemic. During those proceedings, the group discussed the previously published *ISSI Committee Recommendation for Iowa Statewide Interoperable Communication System (ISICS) use of ISSI connection* staff study memo, ISSI technology, and heard testimony from subject matter experts (SMEs).

III. Shared Systems Study Group Findings

A. Meeting Proceedings

The SSSG met for the first time in March 2020. During the introductory meeting (see [Appendix B](#) for minutes), a brief history of the origins of the SSSG was given along with the purpose of the group. The group members then established additional goals for the SSSG. They included but were not limited to:

- Best practices and suggestions for VHF/700 MHz/800 MHz users
- Establishing affordability
- Bridging communications gaps
- Developing an understanding of LMR systems
- Technical considerations of an ISSI
- Looking into legal aspects related to ISSI
- Clarifying what interoperability entails from all lanes of the *SAFECOM Interoperability Continuum*[11]
- Training and education related to ISSI

A brief review of the SAFECOM Interoperability Continuum and *ISSI Committee Recommendation for Iowa Statewide Interoperable Communication System (ISICS) use of ISSI connection* staff study memo were also conducted. Group members also listed ideas that had been mentioned to them about what an ISSI can do.

While no meeting was held in April 2020 due to the COVID-19 pandemic, the SSSG was given materials related to the SAFECOM Interoperability Continuum to review.

At the May 2020 meeting Scott Wright, Engineer 2 from the State of Connecticut, presented their statewide P25 LMR system's ISSI deployments and integrations. Mr. Wright outlined that Connecticut's statewide LMR system is built on Motorola infrastructure and operates in P25 Phase II, similar to ISICS. They have been able to successfully deploy an ISSI connection between Motorola-to-Motorola systems and experience some success in deploying an ISSI between Motorola and EF Johnson/Kenwood systems. The Motorola-to-EF Johnson/Kenwood deployment still has several features and functions that do not work appropriately. Mr. Wright went on to explain that their deployment between their statewide Motorola and the New York Metro Transit Authority (NY MTA) L3-Harris system has not yet been successful.

In in this meeting, Mr. Wright discussed some benefits that have been observed from a successful deployment such as the Motorola-to-Motorola integrations along the planning and technical complexities associated with any deployment. Mr. Wright also discussed the staff that is necessary for their deployments which includes three full-time Motorola system technicians (STs) and a Motorola

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[11] https://www.cisa.gov/sites/default/files/publications/interoperability_continuum_brochure_2_1.pdf

system manager (SM). In addition, Connecticut also has a Motorola system technologist assigned to them for 60% of the week. The staff provided to Connecticut by the system manufacturer are in addition to State of Connecticut employees.

Mr. Wright discussed findings in Connecticut that included that not all subscriber radios purchased by agencies will work in an ISSI environment. During further discussion, it was revealed that several Iowa agencies had purchased radios that would not work in an ISSI environment.

The June 2020 SSSG meeting featured P25 Standards SMEs from L3-Harris (Tom Hengeveld and Jeremy Elder) and Motorola Solutions (Andy Davis). During the meeting, the SMEs discussed P25 as it relates to conventional and trunked LMR systems, and how those standards are incorporated into an ISSI deployment.

The P25 SMEs also discussed aspects of how standards are drafted and approved. They added that not all standards are required to be in product. In addition, there may be some P25 standards that are incorporated into products using different methodologies.

The P25 SMEs discussed the current status of P25 Phase II Time Division Multiple Access (TDMA) standards and P25 Compliance and Conformance testing. To date, any P25 conformance testing only pertains to P25 Phase I Frequency Division Multiple Access (FDMA). Compliance Assessment Program (CAP) testing for the ISSI is still not complete.

The P25 SMEs stated that with any ISSI deployment, defining goals is essential to understanding the scope of the project and desired outcomes. They also elaborated on several complexities related to system configuration and The ISICS platform is based on P25 Phase II TDMA technology, so there is a risk of degraded system capacity if talkgroup functionality is downgraded to P25 Phase I FDMA under an ISSI deployment. The SMEs also provided some clarification on licensing and costs and other functionality.

The deployment of the consolettes/control stations to PSAPs was discussed with the P25 SMEs. It was commented that getting a basic connection at the PSAP for patching to talkgroups can work well. The PSAPs that can perform a patch and remotely steer the consolette/control station to a different talkgroup have additional capability.

During member discussion, the SSSG members reviewed information that was conveyed to them and agreed that the main focal point for interoperability in Iowa should be voice-to-voice interoperability. The SSSG also agreed that end users need develop an understanding of interoperability and how products work from reliable, reputable and unbiased sources. In addition, there was discussion on information and guidance that needs to be conveyed to local agencies on how to achieve interoperability.

B.   Discussion of Facts and Findings

The ISSI and to a lesser extent the CSSI have garnered significant interest among public safety users in Iowa dating back to the original ISICS RFI in 2012. Much of this was originally addressed in the *ISSI Committee Recommendation for Iowa Statewide Interoperable Communication System (ISICS) use of ISSI connection* staff study memo. In that document, several facts were outlined and discussed and are re-addressed in this section.

*1.	ISICS a Project 25 (P25) platform was awarded with one Project 25 Inter Radio Frequency Subsystem Interface (ISSI) by Motorola in their contract proposal.*

Upon the completion of the staff study and subsequent action by the ISICSB to adopt it as a technical recommendation, the ISSI was removed from the contracted deployment of ISICS via a change order. The State of Iowa was awarded a contract credit for the undelivered equipment that allowed for the procurement of consolettes that were then passed out to local PSAPs to establish a connection to ISICS. Most of these consolettes were given to PSAPs that would not have benefited from an ISSI installation.

*2.	… Several issues worthy of note emerged during this summit including but not limited to: the training necessary for radio users, the perishable skills of system and platform administrators in deploying ISSI technology between systems, the challenges other states and counties have faced in correcting broken interfaces between disparate system manufacturers when one of the systems upgrades software and the burden of initial cost, significant costs of trouble shoot problems between system and platforms in both time and money, and lastly the significant maintenance cost of ISSI technology for day-to-day use.*

There still appear to be instances of limited or a lack of functionality between disparate manufacturers in an ISSI deployment that would be comparable to configurations in Iowa—e.g. Motorola to L3-Harris—based on testimony from the State of Connecticut. Software updates also need to be conducted in such a way to ensure backwards compatibility. The P25 SMEs stated that while they test for backwards compatibility with software updates, they cannot test every combination and configuration.

Costs still appear to be high based on the initial installation of equipment, backhaul required to network the systems together and potential need for full-time employees (FTEs) to manage the network(s). This is in addition to any special contracted employees from the manufacturers.

*3.	ISSI is a P25 standardized system interface between networks. Each network requires backup connections for each ISSI connection so communications is may be maintained during a primary system failure. Depending upon configuration of the backhaul and reliability requirements to achieve 99.999 percent reliability with 1 percent grade of service can require a direct connection between each primary and every backup core of each system such that there is a reliable transition in the event of a system failure of either system. Any system failure connected to ISICS would need to instantly rollover to backup cores of either system. If this auto rollover is not necessary, then it is questionable if the value-added proposition of ISSI serves any real value if its loss is not factored in the cost model.*

While some modern system designs can assist with streamlining networking in a multiple connection environment like may be required in Iowa, relying on a single pathway to connect the systems together introduces a single point of failure which may not be desirable due to the introduction of a single point of failure. In addition, the

ISICS platform utilizes Dynamic System Resiliency (DSR) for primary to backup core transitions. This functionality is not currently supported in a Motorola-to-L3-Harris ISSI deployment. In a situation in which the ISICS backup cores may need to utilized, this could render ISSI dependent L3-Harris system users without a connection to ISICS for interoperable communications.

*4.	ISSI backhaul connections between system, (e.g., capacity to each core) and the number of ISSI physical connections increase as the ISICS platform connects to more subsystems. This presents daily, weekly and monthly ongoing costs in labor and technical maintenance for both subsystems.*

This is generally unchanged.

*5.	In conversations with Iowa locals they assume the State will pick up any cost to create an ISSI interface between systems, at no cost to those locals. However, neither the State nor ISICSB has adequate budgeted funds to pay for any additional ISSI infrastructure or monthly cost backhaul which would require to be in place in perpetuity.*

While perceptions on who would pay for equipment and services may have changed or evolved, there are no budgeted monies for additional ISSI equipment, expansion of channel capacity to support ISSI users, or costs associated with backhaul and FTEs.

*6.	Exact costs for ISSI backhaul between ISICS and other systems (whether microwave or fiber connections) cannot be determined at this time. Even if these current costs could be determined, they would not be reliable, for the foreseeable future, as adding one more subsystem to the mix of ISSI interfaces would add to these integrated complexities and require additional backhaul driving up monthly costs. Additionally, the capacity of ISSI is limited to a finite number of system interfaces, and the cost of ISSI infrastructure is significant. Pricing can range into the millions of dollars to cover infrastructure and software on both ends of disparate systems. While bids would be required for exact pricing, conversations with vendors and current ISSI users, indicate costs exceeding a million dollars per system interface is not uncommon.*

Expected costs to install an ISSI at the various ISICS cores, backhaul connectivity and necessary channel capacity upgrades at sites is expected to exceed several million dollars in start-up costs. In addition, the on-going maintenance and FTE costs to manage an ISSI deployment would continue to add additional costs.

*7.	There is no reliable way to determine the number of push to talks that would be used for interoperability between ISICS and other county systems on a daily, weekly, monthly or yearly basis. Even if that number of push to talks could be determined when divided by a cost of over one million dollars per connection the cost of each push to talk is quite expensive.*

As the ISICS platform and consolettes/control stations have been distributed to PSAPs, these numbers are starting to gain some clarity. However, until more in-field radios are connected directly to ISICS, some of these numbers may continue to be nebulous and

may not be representative of how an ISSI would be used in the field. Even then, those numbers would be representative of total number of push-to-talks on ISICS directly and may not correspond to how much an ISSI would be utilized.

Given that the consolettes/control stations have proven to be a robust and cost-effective solution during real-world events by providing pathways for creating as needed on-demand patches between systems, this creates a stark contrast in methodologies of connecting systems. The consolettes/control stations are not limited to licensing like an ISSI and give public safety telecommunicators much more flexibility in communicating with in-field public safety personnel. Given their low start-up and on-going costs, the consolettes/control station integrations into PSCCs present a cost-effective alternative to an ISSI in several regards.

In addition, the consolettes/control stations allow public safety telecommunicators an avenue to track personnel from their PSCCs even when those in-field personnel are far outside of their normal jurisdictional area.

8.   Federal Partnership for Interoperable Communications (FPIC), SAFECOM, and National Council of Statewide Interoperability Coordinators (NCSWIC) and other interested stakeholders have been examining existing ISSI usages looking at value added versus challenges to establish and maintain ISSI between disparate vendor equipment. The anecdotal evidence is not good. When one opens discussions about success they seem to be rare while concerns about persistent failures seem to be quite prevalent.

The FPIC, SAFECOM and NCSWIC groups have continued to meet and discuss ISSI/CSSI technology since the initial Staff Study was completed in 2017. Several in-person meetings with public safety stakeholders and representatives from the various infrastructure manufacturers have led to some improvements in successful deployment outcomes. However, most of the noted successes rely upon the ISSI connection to be between systems of the same manufacturer. Connections between disparate manufacturers continues to bring limited or no success.

When an agency is looking to potentially purchase and deploy an ISSI/CSSI, specific goals and performance metrics must be established in order to create a pathway for success. Those goals likely will parlay into the cost- and operational effectiveness of the ISSI/CSSI installation.

9.   Each radio manufacturer vendor which chose to implemented P25 standard for ISSI interpreted standard guidelines in a unique way consistent with their system design. System design between manufacturers and features which will pass through an ISSI were found to be maturing but not reliable. Unfortunately often fixing one problem often creates other problems.

This is still true. The TIA cannot mandate that manufacturers incorporate standards into product. In addition, the TIA cannot mandate that manufacturers incorporate common features and standards into products using uniform methodology. This discrepancy in feature sets and methods can lead to a failure in deployments if certain functionality is expected.

10.   Department of Homeland Security (DHS) hosted a summit in Denver, Colorado in 2016 with manufacturers of ISSI, their user community and other interested stakeholders to examine possibilities of standardizing the ISSI feature. Thus far several meetings have produced no demonstrable progress in solving known interface issues.

Additional summits have been held in numerous cities since then. The ISSI/CSSI continue to be a focal point of needed improvement within P25. Agencies attempting to implement or have already installed an ISSI have discussed numerous issues with their deployments. While many of the problems have been addressed in an ISSI/CSSI deployment between two P25 LMR systems of the same manufacturer, problems persist in deployments between P25 LMR systems of disparate manufacturers.

11.   There are several public safety organizations attending DHS meetings claiming their ISSI solutions are not working as expected between disparate vendor radio systems.

This is still true in situations in which the attempted deployment is between P25 systems of disparate manufacturers. As an example, many of the ISSI-related standards are focused on FDMA. This presents potential capacity issues if a system based on the more spectral efficient TDMA is forced to operate in FDMA mode. Additionally, radios are not able to seamlessly roam automatically between ISSI-connected P25 systems made by different manufacturers. The radio user must still physically touch the radio and change talkgroups. This presents no current operational advantages to in-field public safety personnel.

12.   Most P25 radio subscriber units (mobiles and portables in 700/800 MHZ band) can be programmed to accommodate FDMA and TDMA by channel. So even if currently deployed FDMA radios on the various county FDMA systems are not equipped with TDMA capabilities, they can be upgraded unit by unit to provide TDMA on interoperability channels.

This is true. Several agencies in Iowa have updated or upgraded to P25 radio subscriber units to TDMA capability or have procured new TDMA-equipped P25 radio subscriber units. Modern P25 radio subscriber units can also be programmed to handle multiple conventional and trunked radio systems. This is has been demonstrated with agencies residing and operating in Iowa along with neighboring state and federal partner agencies. This has also brought for several instances of successful interoperable communications among agencies spanning all levels of government (e.g. municipal, county, state, federal) that can be accomplished by changing the radio to a common talkgroup or channel.

13.   ISICSB Issues Public Safety Interoperable Communications Grants (PSIC) in which each grant recipient agreed to connect to the state platform when built. The grantees did not specify how they would connect to the statewide system, just that they would connect.

In utilizing the ISICSB-provided consolette/control stations, this essentially fulfills the PSIC Grant requirements.

The *ISSI Committee Recommendation for Iowa Statewide Interoperable Communication System (ISICS) use of ISSI connection* staff study memo also derived several conclusions that are re-addressed in this section.

> *1.   ISICSB does not have adequate funding to deploy ISSI and absorb the cost of the backhaul to all three ISICS core locations on a monthly basis. The current microwave network was not designed to accommodate this additional radio system loading.*

The ISICSB has not received an additional funding in several years to assist with additional absorption of start-up and on-going costs presented with an ISSI deployment.

> *2.   The P25 ISSI technology as currently deployed by various vendors has not proven to be a reliable nor elegant interoperability solution. Various vendors' software and hardware solutions have proven to fall out of alignment when one upgrades software or hardware and the other system does not. Therefore, ISSI technology … needs to undergo further maturation.*

While there have been improvements in ISSI deployments between P25 LMR systems made by the same manufacturer, there continue to be various struggles with ISSI deployments between P25 LMR systems made by different manufacturers. In addition, many of the standards associated with an ISSI deployment are built upon FDMA operation. With ISICS and other P25 LMR systems in Iowa operating under TDMA, significant questions arise with respect to functionality and capacity with respect to supported standards and features.

> *3.   ISSI may offer a future value when FirstNet deployed broadband data across Iowa is available.*

Iowa is an active participate in the Alliance for Telecommunications Industry Solutions (ATIS) Joint-LMR LTE (JLMRLTE) group that is working on developing the interworking functions (IWF) and standards between P25 LMR and 3GPP LTE systems. Other states are currently investigating this type of connection as well.

> *4.   Most P25 radios are capable of being programmed to accommodate TDMA and FDMA by talkgroups. Therefore, all radios across Iowa should be programmed to TDMA on the ISICS interoperability talkgroups.*

This ability among agencies has expanded since the original staff study was published in 2017. This continues to present an effective means of achieving interoperability and is consistent with practices in legacy conventional systems.

> *5.   PSIC Grantees need direction in how to connect users to ISICS to comply with grant obligations at time of grant award.*

This statement now appears to have broader application today as agencies that did not receive PSIC Grants are seeking additional guidance and clarity on achieving

interoperable communications. Additionally, those agencies seeking guidance and clarity may also need funding assistance to procure necessary equipment within their PSCCs and end-user radio equipment.

The *ISSI Committee Recommendation for Iowa Statewide Interoperable Communication System (ISICS) use of ISSI connection* staff study memo made two recommendations that are re-addressed in this section.

> 1.   *Do not use the ISSI interface provided by Motorola at this time between any existing land mobile radio (LMR) systems and have all current and future LMR radio subscriber units programmed to include the ISICS statewide, regional and county interoperability talkgroups.*
>
> This recommendation is still valid given the aforementioned successes regarding use of the consolettes and control stations, and that the modern P25 subscriber radios can be programmed to handle multiple P25 conventional and trunked LMR systems.
>
> 2.   *Have all PSIC grant recipients upgrade their radios to TDMA where capable to satisfy their PSIC grant obligations.*
>
> Many of the PSIC grantees have opted to do this as they have replaced in-field P25 radio subscriber units. Others have able to accomplish this via the installation of the ISICSB-provided consolettes/control stations.

Additional information conveyed by the invited SMEs added further clarity to how specific configurations may preclude a successful ISSI deployment. As an example, the ISICS features DSR. This feature allows the ISICS to recover from infrastructure failure by routing transmissions through back-up cores and pathways. This functionality is vital to ensure proper operation for public safety personnel in the event of a hardware failure, routine maintenance or other instances that may necessitate the use of back-up infrastructure. The ISSI connections between Motorola and L3-Harris do not support this feature which essentially creates a single point of failure. This is inconsistent with equipment that is public safety grade as defined in ISICSB Policy 2015-03.[12]

Another potential configuration problem stems from how P25 radio subscriber units roam from tower to tower. In order for this functionality to occur, the P25 LMR system has to pass what is called a site adjacency list to the P25 radio. This list tells the radio what towers are nearby in the event the signal gets weak. This allows the P25 radio to affiliate with another site. The site adjacency lists do not currently pass through an ISSI connection between Motorola and L3-Harris systems.

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[12] ISICSB Policy 2015-03 Defining Public Safety Grade:
https://isicsb.iowa.gov/sites/default/files/2015_03_final_defining_public_safety_grade_10.14.15.pdf

The FPIC is also in the process of drafting best practices documents for the ISSI/CSSI[13, 14]. Those documents outline findings and provide recommendations for agencies wishing to potentially deploy an ISSI/CSSI. While some of these documents have been published, the set is not complete at the time of this report. Several conclusions of those documents are in this report.

Potentially the biggest pitfall of attempting to procure and deploy an ISSI in Iowa is that it would offer no benefit to agencies relying on conventional LMR systems. The agencies that may see a benefit already have a pathway for interoperability with programming their local system and the ISICS interoperable talkgroups in their P25 radios. Even for the agencies with P25 trunking capable radios, any obtainable benefits may be minimal at this point when compared to what is currently in place with consolettes/control stations in the PSAPs across Iowa.

The SMEs from L3-Harris and Motorola stated very clearly that stakeholders need to define what goals are for any ISSI deployment. In discussions among the members of the SSSG, voice interoperability was stated as the main goal. Given that this can be accomplished with already provided pathways with programming of ISICS regional and statewide interoperability talkgroups in to end user P25 radio subscriber units and connectivity available within the PSAPs with provided consolettes/control stations, the expended monies on an ISSI would seem duplicative.

Additionally, training is an issue that spans the use of technology and other aspects of emergency communications. It is probable that several components of interoperability could be addressed with proper training of personnel using technology and equipment that is currently available. While certain operational situations may be more complex or fast-paced than others, working to ensure public safety personnel are proficient with equipment is paramount to the success of any mission.

IV.   Recommendations

Given the information, updates and overview from the SMEs related to the ISSI, insights on configurations, standards, and the current technological landscape among public safety and public service personnel in Iowa, the SSSG recommends that the ISSI not be used for LMR-to-LMR system connections. The SSSG acknowledges that while conceptually an ISSI seems like a good piece of technology, it is not plug-and-play, and technical realities will continue to prevent a truly successful deployment at this time given that not enough features and functions have been developed and successfully implemented in a multi-manufacturer configuration. With the main concern of the group being voice interoperability, it was noted that other avenues to establish voice interoperability have already been undertaken by the ISICSB and proven successful on several occasions. There would also be

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[13] Best Practices for Planning and Implementation
of P25 Inter-RF Subsystem Interface (ISSI) and
Console Subsystem Interface (CSSI):
Volume I:
https://www.cisa.gov/sites/default/files/publications/issi_cssi_best_practices_vol_1_final_05132019_508c_v2.pdf
[14] Best Practices for Planning and
Implementation of P25 Inter-RF
Subsystem Interface (ISSI) and
Console Subsystem Interface (CSSI):
Volume II: https://www.cisa.gov/sites/default/files/publications/07-02-2020_P25-ISSI-CSSI-Best-Practices-Vol2_FINAL_508c.pdf

no benefit to the majority of Iowa counties or agencies which currently utilize conventional VHF LMR systems if an ISSI were implemented. It seems infeasible that an ISSI deployment would yield a positive return of investment of taxpayer money at this time.

Currently, radios that are capable of accessing ISICS are also capable of accessing other P25 trunked networks in Iowa. These radios can be dual programmed to include those systems. The SSSG recommends that radios be programmed for multiple systems as needed.

The SSSG acknowledges that this may require re-evaluation at some point in the future once specific feature sets are developed, implemented and proven successful, and there would be notable benefits to the majority of counties and agencies within Iowa.

The SSSG recommends that the ISICSB and SWIC be tasked with maintaining awareness of the progression of ISSI and bring recommendations forward as necessary. This includes continued participation within:
- TIA/TR-8
- FPIC
- P25 Steering Committee
- NCSWIC
- SAFECOM
- ATIS JLMRLTE

The SSSG recommends that funding and assistance be made available for agencies to access ISICS for interoperability given this would likely be a more prudent investment of taxpayer monies. This should include control stations, consolettes or dispatch consoles for the PSCCs, mobile and portable in-field subscriber radios, and possibly infrastructure where deemed appropriate. This funding stream should consist of a new revenue source and not siphon monies from other programs. Any funding program should respect home rule and avoid various mandates that may not be achievable. It would be preferable that this be given out to agencies as grants.

The SSSG also recommends that a figurative "playbook" be drafted by ISICSB committees and subcommittees to assist agencies establish a connection to ISICS based on several different known configurations and estimated expected costs. This playbook should focus on interoperability and include work to:
- Update subscriber standards with more examples
- Demonstrate how various PSAPs have integrated consolettes/control stations/consoles
- Demonstrate how various agencies have used mobile and portable radios along with scanners
- Showcase various policies on the use of ISICS with disparate system equipment.

Any "playbook" should include a robust training component to ensure that agencies and personnel are proficient with any procured equipment. Training should also include the use of interoperable talkgroups on ISICS and conventional channels and the associated situations that would necessitate their use.

Finally, the SSSG recognizes that there are several interoperable systems that Iowa agencies that border neighboring states may have to utilize and navigate. In addition to the work already being done, more

investigation on interstate interoperability should be undertaken to assist with the transition from one radio system to the next.

Appendix A. *ISSI Committee Recommendation for Iowa Statewide Interoperable Communication System (ISICS) use of ISSI connection*

Iowa Statewide
Interoperable
Communications
System Board
911

Thomas Lampe, Chair
Jason Leonard, Vice-Chair
Craig Allen, SWIC
Chris Maiers, SWIC

M E M O R A N D U M

TO: All ISICSB Board Members

FROM: SWIC Craig Allen

DATE: June 8, 2017

SUBJECT: ISSI Committee Recommendation for Iowa Statewide Interoperable Communication
System (ISICS) use of ISSI connection.

PROBLEM STATEMENT

ISICS Platform was awarded with one ISSI connection asset with many potential interoperability
partners from across Iowa expressing interest in using this technology. ISSI offers an expensive one
time and sustaining costs as an interoperability solution.

FACTS BEARING ON THE PROBLEM:

1. ISICS a Project 25 (P25) platform was awarded with one Project 25 Inter Radio Frequency Subsystem Interface (ISSI)
   by Motorola in their contract proposal.

2. ISICSB hosted an ISSI Summit on March 13, 2017 at West Des Moines where representatives from
   Telecommunications Industry Association (TIA) TR-8, Project 25 Standards committee chairs participated in a three
   hour ISSI (recorded and broadcast) discussion specifically to discuss ISICS potential use of an ISSI in the Time Division
   Multiple Access (TDMA) 700 MHz Two Slot in an ISSI interface with multiple Frequency Division Multiple Access
   (FDMA) 800 MHz systems. The TIA TR-8 representatives included overall TIA TR-8 Chair Andy Davis, TR-8 Committee
   Wireline Interface Chair Jerry Drobka, TR-8 TDMA Two Slot Chair Roy McClellan and P25 User Group Committee
   Chair Jim Downes the discussion was led by Chief Information Officer Robert Von Wolffradt and SWIC Craig Allen.
   During this three hour summit it became clear from this panel of experts, use of an ISSI interface between a
   statewide platform in TDMA with coverage over laying a county or city subsystem using FDMA was not the most
   practical nor economical solution to interoperability. Several issues worthy of note emerged during this summit
   including but not limited to: the training necessary for radio users, the perishable skills of system and platform
   administrators in deploying ISSI technology between systems, the challenges other states and counties have faced in
   correcting broken interfaces between disparate system manufacturers when one of the systems upgrades software
   and the burden of initial cost, significant costs of trouble shoot problems between system and platforms in both
   time and money, and lastly the significant maintenance cost of ISSI technology for day-to-day use.

3. ISSI is a P25 standardized system interface between networks. Each network requires backup connections for each
   ISSI connection so communications is may be maintained during a primary system failure. Depending upon
   configuration of the backhaul and reliability requirements to achieve 99.999 percent reliability with 1 percent grade

of service can require a direct connection between each primary and every backup core of each system such that there is a reliable transition in the event of a system failure of either system. Any system failure connected to ISICS would need to instantly rollover to backup cores of either system. If this auto rollover is not necessary, then it is questionable if the value-added proposition of ISSI serves any real value if its loss is not factored in the cost model.

4. ISSI backhaul connections between system, (e.g., capacity to each core) and the number of ISSI physical connections increase as the ISICS platform connects to more subsystems. This presents daily, weekly and monthly ongoing costs in labor and technical maintenance for both subsystems.

5. In conversations with Iowa locals they assume the State will pick up any cost to create an ISSI interface between systems, at no cost to those locals. However, neither the State nor ISICSB has adequate budgeted funds to pay for any additional ISSI infrastructure or monthly cost backhaul which would require to be in place in perpetuity

6. Exact costs for ISSI backhaul between ISICS and other systems (whether microwave or fiber connections) cannot be determined at this time. Even if these current costs could be determined, they would not be reliable, for the foreseeable future, as adding one more subsystem to the mix of ISSI interfaces would add to these integrated complexities and require additional backhaul driving up monthly costs. Additionally, the capacity of ISSI is limited to a finite number of system interfaces, and the cost of ISSI infrastructure is significant. Pricing can range into the millions of dollars to cover infrastructure and software on both ends of disparate systems. While bids would be required for exact pricing, conversations with vendors and current ISSI users, indicate costs exceeding a million dollars per system interface is not uncommon.

7. There is no reliable way to determine the number of push to talks that would be used for interoperability between ISICS and other county systems on a daily, weekly, monthly or yearly basis. Even if that number of push to talks could be determined when divided by a cost of over one million dollars per connection the cost of each push to talk is quite expensive.

8. Federal Partnership for Interoperable Communications (FPIC), SAFECOM, and National Council of Statewide Interoperability Coordinators (NCSWIC) and other interested stakeholders have been examining existing ISSI usages looking at value added versus challenges to establish and maintain ISSI between disparate vendor equipment. The anecdotal evidence is not good. When one opens discussions about success they seem to be rare while concerns about persistent failures seem to be quite prevalent.

9. Each radio manufacturer vendor which chose to implemented P25 standard for ISSI interpreted standard guidelines in a unique way consistent with their system design. System design between manufacturers and features which will pass through an ISSI were found to be maturing but not reliable. Unfortunately often fixing one problem often creates other problems.

10. Department of Homeland Security (DHS) hosted a summit in Denver, Colorado in 2016 with manufacturers of ISSI, their user community and other interested stakeholders to examine possibilities of standardizing the ISSI feature. Thus far several meetings have produced no demonstrable progress in solving known interface issues.

11. There are several public safety organizations attending DHS meetings claiming their ISSI solutions are not working as expected between disparate vendor radio systems.

12. Most P25 radio subscriber units (mobiles and portables in 700/800 MHZ band) can be programmed to accommodate FDMA and TDMA by channel. So even if currently deployed FDMA radios on the various county FDMA systems are not equipped with TDMA capabilities, they can be upgraded unit by unit to provide TDMA on interoperability channels.

2

13. ISICSB Issues Public Safety Interoperable Communications Grants (PSIC) in which each grant recipient agreed to connect to the state platform when built. The grantees did not specify how they would connect to the statewide system, just that they would connect.

DISCUSSION OF THE ISSUES:

1. ISSI P25 feature may one day evolve into a workable solution for cross platform interfaces. However, today this solution does not appear a good value proposition for Iowa.

2. ISSI seems to offer the greatest value proposition to radio systems geographically situated side-by-side (county beside county) and not in one over the other circumstances like in Iowa ISICS statewide platform and the county subsystems within the same coverage footprint.

3. ISICS offers in building coverage within communities (cities) of over 30,000 populations. The Iowa county subsystems operating today are in these same population centers, therefore there does not appear to be a value proposition for ISSI in those areas of platform over system overlay.

4. ISICS is a free use platform. County users leaving their fee for service networks will not be required to pay a fee to use ISICS for interoperability. County fee for service systems have verbally indicated they expected to be compensated for outside users coming onto and using their networks. ISSI further loses value if outside ISICS users would be expected to pay for use of using a county system via ISSI interface where ISICS already provides radio coverage.

5. There may be a use for ISSI in the future as the process through which FirstNet is deployed across Iowa. FirstNet uses Long-Term Evolution (LTE) technology, and many expect LTE to allow a push to talk interface between P25 platforms and FirstNet LTE networks at some point in the future. If the ISSI technology advances and LTE interface is proven workable, this may be a viable future consideration for cross system push to talk.

6. The most obvious and easily manageable solution for statewide interoperability between existing FDMA 800 MHz users and ISICS TDMA 700 MHZ platform is to program every 700/800 MHz radio subscriber unit into ISICS and have all radios programmed with the same ISICSB approved bank of interoperability talk groups. The only cost is programming the talk groups in the radios and for those radios capable of being upgraded to TDMA on a talk group basis, having PSIC grantees pay that upgrade cost as part of their grant match and meeting the obligation to "connect to the statewide platform."

CONCLUSIONS:

1. ISICSB does not have adequate funding to deploy ISSI and absorb the cost of the backhaul to all three ISICS core locations on a monthly basis. The current microwave network was not designed to accommodate this additional radio system loading.

2. The P25 ISSI technology as currently deployed by various vendors has not proven to be a reliable nor elegant interoperability solution. Various vendors' software and hardware solutions have proven to fall out of alignment when one upgrades software or hardware and the other system does not. Therefore, ISSI technology ... needs to undergo further maturation.

3. ISSI may offer a future value when FirstNet deployed broadband data across Iowa is available.

4. Most P25 radios are capable of being programmed to accommodate TDMA and FDMA by talkgroups. Therefore, all radios across Iowa should be programmed to TDMA on the ISICS interoperability talkgroups.

3

5. PSIC Grantees need direction in how to connect users to ISICS to comply with grant obligations at time of grant award.

RECOMMENDATION:

1. Do not use the ISSI interface provided by Motorola at this time between any existing land mobile radio (LMR) systems and have all current and future LMR radio subscriber units programmed to include the ISICS statewide, regional and county interoperability talkgroups
2. Have all PSIC grant recipients upgrade their radios to TDMA where capable to satisfy their PSIC grant obligations.

COSTS - None

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Appendix B. Shared Systems Study Group Meeting Minutes

Shared Systems Study Group (SSSG)
Meeting Minutes
March 11, 2020 at 1300
Location: Iowa Department of Public Safety
Ole O Roe Training Room
215 E 7th St, Des Moines, IA 50319

Conference line opened up at 1250.

Present in person: Jason Hoffman, Chris Jasper, Curt Woten, Dan Rammelsberg, Corey Trucke, Keith Davis, Scott Richardson, Chris Maiers, Curtis "Wally" Walser

Present on the phone: Chad Leonard, Gary Anderson, Brian Hamman, Dennis McDaniel

Absent: Jason Study, Rob Rotter

Chris Maiers started the meeting at 1300 with introductions of members. Those in attendance introduced themselves, listed their agency and home land mobile radio (LMR) system type and frequency set used.

Mr. Maiers gave a brief history of the origins of the Shared Systems Study Group (SSSG), and the purpose of the group. Mr. Maiers listed the tasks given to the SSSG by the ISICSB.

Curtis "Wally" Walser and Mr. Maiers then proceeded to give an overview of the ISSI/CSSI technology. They conducted a poll of the group to find what goals consisted of. Common goals among members included:

- Best practices and suggestions for VHF users
- Best practices and suggestions for 700/800 users
- Affordability – Fully vetting
  - Deployment
  - Maintenance costs with technologies
  - Funding sources
- Is it realistic with costs and technological requirements?
- Capacity/Coverage
  - Will an ISSI help or hurt?
  - P25 Phase I vs P25 Phase II
  - Portable vs mobile
- Bridging communications gaps
  - Iowa to other states
  - PSAP to PSAP
- Legal aspects of ISSI/CSSI
- Clarifying what interoperability means between people
  - Cooperation w/ other agencies
  - Governance and agreements
- Understanding of technology and requirements in a practical sense
- Training and education needs
  - What they need to do vs level of comfort
- Ease of use
- Understanding balance between technology and governance
- Developing an understanding of differences between trunked and conventional LMR systems
- Figuring out where dual-programmed radios fit into the equation

Shared Systems Study Group (SSSG)
Meeting Minutes
March 11, 2020 at 1300
Location: Iowa Department of Public Safety
Ole O Roe Training Room
215 E 7ᵗʰ St, Des Moines, IA 50319

- Will ISSI/CSSI affect system integrity? Are there unintended consequences?
- What is lowest common denominator?
    - Concern with switching of radios
- If everything were tied together, would it be too much to listen to?

Mr. Walser noted that many of the items mentioned by SSSG members are a part of the SAFECOM Interoperability Continuum that fall outside of technology. The SSSG then proceeded to do a cursory review of the SAFECOM Interoperability Continuum as Mr. Maiers displayed it on the projection screen. Mr. Walser reviewed where various LMR systems in Iowa would fall on the Technology lane with the SSSG. Mr. Maiers discussed that there is a pamphlet and white paper that coincide with the SAFECOM Interoperability Continuum. Mr. Maiers also mentioned to the group that the SAFECOM Continuum is being updated, and that the SSSG would likely be able to get early access.

The SSSG decided they would like a review of the SAFECOM Interoperability Continuum.

Mr. Walser and Mr. Maiers then asked the group to give their thoughts on what they have heard an ISSI can do whether true or not. Common responses among members included:
- ISSI is a network-based solution to connect LMR systems
- Potential for inter-network roaming
- ISSI is not an end all/be all solution
- Only way for non-ISICS user to use ISICS
- Roaming between systems at-will, statewide
- Increase coverage footprint
- Problems with ID management
- Only certain talkgroups will pass through an ISSI
    - Licensing and additional costs
- Potential for loading issues.
- ISSI would not help VHF
- Two separate systems would act as one system

Mr. Maiers then gave an overview of the previous 2017 ISSI Staff Study that was adopted as a technical recommendation by the ISICSB.

The SSSG then decided on several action steps for the next several meetings. They include:
- Discussion with another state working on a multi-manufacturer deployment—New York and Connecticut
- Discussion with another state working on a single manufacturer deployment
- Decide if certain configurations would require multiple ISSIs depending on how subsystems are arranged
- Learn configuration topography from standards groups such as TR-8
- Learn which features pass across an ISSI
    - CAP Testing updates
- Where does a potential tie in with FirstNet fit

Shared Systems Study Group (SSSG)
Meeting Minutes
March 11, 2020 at 1300
Location: Iowa Department of Public Safety
Ole O Roe Training Room
215 E 7ᵗʰ St, Des Moines, IA 50319

Conference line opened up at 1255 CDT.
Meeting Commenced at 1302 CDT.
Present in person: N/A

Present on the phone: Sheriff Gary Anderson, Chief Dennis McDaniel, District Chief Curtis "Wally" Walser, Scott Richardson, Sheriff Keith Davis, Curt Woten, Dan Rammelsberg, Chris Maiers, Terry McClannahan (stand in for Sheriff Chad Leonard)

Absent: Jason Study, Sheriff Rob Rotter, Jason Hoffman, Chris Jasper, Sergeant Corey Trucke, Brian Hamman, Sheriff Chad Leonard

Chris Maiers started the meeting at 1300 with a role call and expression of thanks for those working to address COVID-19 related items in their areas introductions of members. Those in attendance introduced themselves, listed their agency.

Mr. Maiers presented the last meeting minutes from the Shared Systems Study Group (SSSG). He requested the members review them and to voice any concerns related to topics in the minutes related to the inter-RF subsystem interface (ISSI) and/or console subsystem interface (CSSI).

Mr. Maiers revisited some items presented by members of the SSSG that do not directly fall in the lane of technology on the SAFECOM Interoperability Continuum. Mr. Maiers asked if members had a chance to review the documents and if they were beneficial. Further work will be done within the SSSG to further develop an understanding of how technology can fit into the larger interoperable picture for agencies.

Mr. Maiers then introduced Scott Wright, engineer 2, State of Connecticut. Mr. Wright is the lead engineer for the Connecticut statewide P25 Phase II trunked land mobile radio (LMR) system. He is also active within the Motorola Trunked Users Group in the Northeast and is a member of the Federal Partnership for Interoperable Communication's (FPIC) ISSI/CSSI Focus Group.

The Connecticut statewide LMR system is built on Motorola infrastructure with a baseline of 98% mobile coverage and has 12 channels per site. Since the network is Phase II, it provides for 22 talk paths when the control channel is factored out. Network loading is not expected to be an issue give the large capacity of the Connecticut network. Local subsystems do not have that much capacity, so system loading concerns must always be addressed. There were exiting disparate trunked Motorola and EF Johnson LMR systems in Connecticut that utilized their own system cores.

Mr. Maiers then proceeded to ask Mr. Wright about the Connecticut radio system and their experiences with ISSI/CSSI. The responses are summarized in the following paragraphs.

Mr. Wright discussed an updated ISSI/CSSI project (first ISSI purchased in 2015) that started over two years ago (December 2017) in which work began to integrate separate, disparate systems within and around Connecticut together. The desire was to connect disparate Motorola (Connecticut-based), EF Johnson (Connecticut-based) and L3-Harris (State of New York Metro Transit Authority) systems to the

Connecticut statewide LMR system. They have also been able to integrate an AVTEC console via CSSI, and work will begin soon with a Zetron console.

They have found that an interface between two Motorola P25 trunked LMR systems can work well and is fully automatic. They have also found that an interface between a Motorola P25 trunked LMR system and an EF Johnson P25 trunked LMR system can work reasonably well in manual roaming (user has to manually switch talkgroups/systems on the radio), but some features will not work or pass across an ISSI. They have not yet had success in integrating a Motorola P25 trunked LMR system to a L3-Harris P25 trunked LMR system.

Mr. Wright went on to elaborate that as agencies connect with ISSI, it can add layers of complexity that must be addressed. He stated that ISSI connections are not "plug-and-play". Local radio shops may not have comfort or the ability be able to deploy ISSI effectively and program radios in an environment in which ISSI has been deployed. In addition, extra equipment had to be purchased to accommodate systematic differences between P25 Phase I (FDMA) and P25 Phase II (TDMA) trunked systems that are connected via ISSI. He also stated that the technically may be billed as being mature, but there are still issues to be overcome with development and deployment.

There is a significant amount of planning that has to go into an ISSI deployment that involves agreements among government agencies.

For the successful ISSI connections they use a combination of dark fiber and microwave backhaul which the State of Connecticut owns, so costs are mitigated. This is a part of their 911 program and minimizes the need for leased fiber.

Connecticut also has three full-time System Technicians (STs) and a System Manager assigned to them by Motorola under their most current maintenance agreement. They also have a Motorola System Technologist assigned to them 60% of the week. This assures Connecticut will have a high level of knowledge, skillsets and abilities that can be applied to their statewide LMR connection and associated ISSI connections. The STs have a lot of work to deploy and maintain an ISSI. Connecticut does not use a local shop for their work on ISSI/CSSI.

Connecticut has used the ISSI to extend coverage for local systems. Local agencies can use state infrastructure via the ISSI configuration to extend service area of local talkgroups, and state agencies are able to use local infrastructure with their operational talkgroups. In this set-up, care must be taken to not overload the local LMR systems.

Mr. Wright touched on the governance side of the technology deployment. Specifically that agencies need to agree on how to connect talkgroups and which talkgroups can roam from system to system to mitigate loading concerns on local systems. If done effectively, the state can get enhanced local coverage in some cases. Locals can also utilize the pre-existing state-built infrastructure.

They have uncovered some universal issues with what passes between LMR systems via an ISSI:
- Radio aliases will not pass from one manufacturer's system to another manufacturer's system.

- Not all manufacturers send/receive site adjacency tables across the ISSI.
  - This is especially an issue if a site has to use an alternative control channel.
- The L3-Harris XL200 had some roaming issues in some ISSI deployments and had to be specifically programmed to avoid certain sites/systems.
  - The specific Advanced Access Control key for the system that needs to be avoided has to be available to program this into a radio.
- Emergency clearing may not work effectively.
- Radios may not be able to automatically roam between unconnected systems—e.g. A radio may be able to roam to a larger state system via the ISSI from its local system, but will not be able to roam to another local system near-by via the ISSI unless another ISSI connection is present.
- Not all radios function in an ISSI environment
  - No Kenwood NX or BK-Realm radios to date have been shown to be able to operate under an ISSI

Mr. Maiers gave a summary on the general layout of the Iowa Statewide Interoperable Communications System (ISICS) and other LMR systems in Iowa along with previous work to deploy consolettes and control stations to PSAPs. Mr. Wright stated that work is being done with compatibility issues between Motorola and L3-Harris to address system redundancy—i.e. Motorola has a different method than L3-Harris, and the functions do not work across an ISSI—and would go through the process again.

Mr. Wright has not seen any early results of the Compliance Assessment Program (CAP) work since it is still preliminary, but is looking forward to that program's deployment and will be interested to see the results of those tests since there are different ways to implement P25 standards that may not be compatible across an ISSI.

Mr. Wright summarized that if an ISSI can be effectively deployed and be fully functional, an ISSI can save some money long-term, but there are caveats that need to be considered and addressed. It may not be possible to mitigate all the potential issues.

The meeting was then opened for group questions to Mr. Wright.

Chief Walser posed some application specific questions to Mr. Wright. Part of the project scope for the L3-Harris to Motorola ISSI for Connecticut and New York is to have automatic roaming work out of the box for officer safety on their routes. Chief Walser posed a question regarding how radios have to be programmed to operate in an ISSI environment. Mr. Wright elaborated that all the manufacturers handling radio roaming differently in an ISSI environment. With Motorola, the programming has to include a profile with inter-WACN roaming enabled with the properties of the home system. Site adjacency tables are necessary for this to work effectively with minimal programming and not adding other control channels. Some other radios have to be told where they cannot go in an ISSI environment.

Mr. Maiers asked a question about vehicular repeaters. Mr. Wright clarified that vehicular repeaters are not intelligent enough to handle some of the functions of ISSI. They have engaged Futurecom regarding issues and needs along with possible implementations.

Mr. Rammelsberg posed a question about a radio that may be powered up in an area the radio had not previously been in, and if that would cause an affiliation failure away from the home system. Mr. Wright stated that radios will have a memory of where they were when they were powered down. However, Connecticut had not yet tested the specific conditions that Mr. Rammelsberg outlined and would have to experiment to find out how the radios respond to that situation.

Mr. Maiers asked Mr. Wright clarify which environments will work with an ISSI. Mr. Wright clarified that an ISSI will only work in a trunked environment and will not operate in a conventional system such as the VHF conventional systems in Iowa.

Mr. Maiers also asked Mr. Wright to elaborate if they have any plans to utilize an ISSI to connect their statewide system to an LTE network such as FirstNet or Verizon. Mr. Wright explained that already have a small bit of that with the WAVE program since that utilizes an ISSI-like interface. They have not yet been approached by an LTE provider to integrate their LMR network into the LTE networks. They are also not looking to utilize other services like Critical Connect at this time until aspects of cybersecurity associated with cloud based applications are addressed and use cases are properly defined.

Sheriff Davis made a request that LEA support be investigated for extension due to the COVID-19 pandemic. Mr. Maiers stated that LEA support has some technology and support aspects associated with it, and LEA specifically is outside of the purview of the SSSG, but he would pass the request on to the LEA Committee.

Mr. Woten posed a question about some subscriber radios not being compatible in an ISSI environment, and Mr. Maiers and Chief Walser explained some manufacture specific details on a product line and a possible implementation strategy.

Mr. Maiers gave a brief update on the status of the P25 Compliance Assessment Program (CAP) for the ISSI/CSSI. The CAP testing has not yet been done an ISSI/CSSI, but there is a public document available for comment that outlines a process for ISSI/CSSI testing. Mr. Maiers also discussed a lab that could do the testing, Bureau of Land Management, and their progress through lab certification. Mr. Maiers stressed that the CAP testing would likely yield valuable information once testing is complete.

The meeting adjourned at approximately 1403 CDT.

Conference line opened up at 1245 CDT.
Meeting Commenced at 1304 CDT.
Present in person: N/A

Present on the phone: Sheriff Gary Anderson, District Chief Curtis "Wally" Walser, Scott Richardson, Sheriff Keith Davis, Curt Woten, Chris Maiers, Terry McClannahan (stand in for Sheriff Chad Leonard), Jason Hoffman, Chris Jasper

Absent: Jason Study, Sheriff Rob Rotter, Sergeant Corey Trucke, Brian Hamman, Sheriff Chad Leonard, Chief Dennis McDaniel, Dan Rammelsberg

Chris Maiers started the meeting at 1304 with a role call and expression of thanks for those able to virtually attend the meeting. Those in attendance introduced themselves, listed their agency and home system.

Mr. Maiers presented the last meeting minutes from the May Shared Systems Study Group (SSSG). He requested the members review them and to voice any concerns related to topics in the minutes related to the inter-RF subsystem interface (ISSI) and/or console subsystem interface (CSSI). No comments were offered.

Mr. Maiers then introduced Andy Davis from Motorola Solutions and chair of TIA/TR-8 (Telecommunications Industry Association TR-8), Tom Hengeveld of L3-Harris and a member of TIA/TR-8 and Jeremy Elder of L3-Harris and a member of TIA/TR-8. Mr. Davis, Mr. Hengeveld and Mr. Elder all work within the TIA/TR-8 group to develop standards for APCO Project 25 (P25) land mobile radio (LMR) and served as subject matter experts (SMEs) for this meeting. Mr. Davis is also the current chair of the TIA/TR-8 group that is developing standards for interoperability between LMR and long term evolution (LTE) cellular systems. Mr. Hengeveld is the director of standards at L3-Harris. Mr. Elder is also the director of products for P25 systems at L3-Harris.

Mr. Davis gave an overview of P25 in general. He discussed that P25 is a digital radio standard over the common air interface (CAI) and covers conventional LMR, Phase I frequency division multiple access (FDMA), and Phase II time divisions multiple access (TDMA). There are some components of analog in the P25 standards as well, but not many. He also discussed that P25 covers inter-subsystem connections for trunked FDMA and TDMA systems. There is also a section for inter-subsystem connections between trunked and conventional systems, but it is very complicated.

Mr. Davis also stated that P25 branches into some programming standards, console interfaces, multiple key management facility (KMF) interfaces, over the air rekeying (OTAR), and other items. Essentially P25 is a defined set of messages for radios and systems to interact with each other.

Mr. Hengeveld, Mr. Elder and Mr. Davis added that the P25 standards are derived from with input from users to establish user-driven capabilities designed for public safety, and P25 is mature overall. The manufacturers and users then draft the standards. Standards can also start from common features among the manufactures (the processes for these features may differ among the manufacturers). All

standards must be presented to the P25 Steering Committee (generally comprised of governmental LMR users) for final approval.

Mr. Davis added that TIA cannot mandate features/standards be incorporated into product, and that it is up to the manufacturers to implement features into products. This also allows for proprietary features.

Mr. Maiers requested that the guest speakers elaborate on the features and standards. Mr. Davis and Mr. Hengeveld explained that in many cases there is one way features/standards work. However, there are variations within the P25 standards that allow for two methods such as ICall, emergency cancel, and other sub-features (e.g. group call fast start vs all start; group call is the standard way a radio calls other radios on the same talkgroup). Additionally the manufacturers will work for customer base & try to figure out how to adapt methods. There are also some tests that are conducted for standards compliance and interoperability.

Mr. Davis, Mr. Hengeveld and Mr. Elder then discussed the P25 Compliance Assessment Program (CAP). Much of that information is on the P25 CAP web site (https://www.dhs.gov/science-and-technology/p25-cap). This type of testing on the ISSI is not done, and involves the manufacturers. The compliance assessment bulletins (CABs) are still being stood up and are the basis for the tests.

Mr. Maiers requested that Mr. Davis, Mr. Hengeveld, and Mr. Elder discuss standards related to TDMA since the Iowa Statewide Interoperable Communications System (ISICS) is a TDMA system. Mr. Davis, Mr. Hengeveld, and Mr. Elder discussed that the CAI standards for TDMA are complete except for a TDMA control channel, and there are currently no tests for a TDMA control channel.

Mr. Davis, Mr. Hengeveld, and Mr. Elder transitioned to discussing TDMA standards relative to the ISSI. They clarified that the ISSI is similar to a point-to-point protocol and attempts to handle both FDMA and TDMA functionality. However, the current conformance tests only address FDMA operation.

They added that standards are always evolving and are typically based on market demand since manufacturers tend to be the authors. Supported features are also constantly changing.

A question was posed to the SMEs about programming and system configuration. Mr. Davis responded that several aspects of LMR can be complicated by an ISSI especially programming. It is more complicated to program radios to behave properly when using that type of equipment. If a system is set up for automatic roaming, the system(s) have to figure out if a radio is allowed with that talkgroup on that site. It also has to figure out what to do across systems when something initiates a group call (pushes the Push-to-Talk button on the radio).

Mr. Hengeveld added that added complexities can come from the routing of a group call and gave an explanation of how this works in two scenarios—1) Group call from home system to serving/foreign system; and 2) Group call from serving/foreign system to home system. These scenarios are complicated further when sub-features such as group call fast start vs all start are factored in. Mr. Hengeveld added that different configurations complicate the connection between two systems, and

standards attempt to address these. Mr. Davis elaborated a bit more on the system configurations in that they can be set up to allow the home system to be the authority. Mr. Hengeveld added that there is a lot of flexibility in how group calls are routed.

Mr. Maiers requested that the SMEs cover any feature implementation differences that may exist between Motorola and L3-Harris LMR systems. The manufacturer SMEs discussed various feature differences that are and are not supported in the ISSI. They also discussed standards that are still being implemented and variations that may affect functionality. Mr. Hengeveld added that often they have an idea of what can work, but that functionality may not be static as market demand changes and associated features and standards are updated.

The SMEs then discussed software compatibilities across the manufacturers. While the manufacturers test with each other, full compatibility may not be achieved since not all combinations can be tested as software updates may add features.

Mr. Maiers requested the SMEs discuss current work on connecting LMR systems to LTE platforms such as FirstNet. Mr. Davis and Mr. Hengeveld stated that the ISSI has not changed tremendously with the introduction of LTE interfaces. There is a component of consumer grade vs mission critical components to be aware of. Products such as Kodiak can work from a LTE environment to LMR over an ISSI, and the process of architecting those standards is on-going. There is a group called the Joint LMR LTE (JLMRLTE) working group under the Alliance for Telecommunication Industry Solutions (ATIS) that is working to facilitate the develop of standards to addresses interworking functions between LMR and LTE. In these cases, the JLMRLTE group has worked to update the ISSI standards so that it can simulate the interworking between LMR and LTE networks.

The meeting the moved to a question and answer session among the Shared System Study Group (SSSG) and the SMEs.

Mr. Hoffman requested that the SMEs expand on how either system handles coverage footprint differences and whether radios will freely roam. Mr. Hengeveld stated that changing systems is harder since preference by the radios is often given to the home system and not all tower sites are treated the same by the radios. Mr. Elder added that much of the behavior of the radios in an ISSI environment can be complex and is determined by system configuration(s). There is also a need for various agreements for any type of roaming or coverage extension. Mr. Davis added that there are additional loading characteristics and other technical items to consider such as bit error rates. In addition, there are different aspects to manual roaming vs automatic roaming. Auto roaming may have restrictions, and manual roaming often has to be set up with predefined identities (e.g. radios have to be programmed for both systems, and both systems have to recognize the radios) on both systems.

The SMEs then added additional clarification for programming of radios. Typically manually roaming means that radios have a personality for each system they connect to. Mr. Elder added that manual roaming is the same with or without an ISSI. Mr. Davis then elaborated on several variations of manual roaming. They added that decisions for configurations on where talkgroups go in various roaming

situations. Typically the system must have some configuration set to decide which radios and talkgroups are allowed to roam from system to system.

Additionally, the SMEs stated the importance of defining how personnel use the interconnected systems/talkgroups. If it is done correctly, it can be leveraged as a way to enhance interoperability depending on the configuration.

Sheriff Davis requested the SMEs clarify if an ISSI would work in Iowa. Mr. Elder stated that there are a number of implementation configurations and goals that need to be defined. There are basic cases that can work. Mr. Davis added that manufacturers test often. Users can still run into problems if their system configuration will not allow them to meet expectations of the technology and restated that users must define what they want to accomplish.

Mr. Hoffman requested that the SMEs revisit the previously mentioned configuration of conventional LMR systems being connected to a trunked system via ISSI via a fixed station interface (FSI). Mr. Davis stated that it can exist, but in order for it to exist, users must pick a single channel to use. From there the use relies on a console patch to pass traffic from the trunked system to the conventional system. This can be done through a fixed station host such as a radio tied to the conventional system that is integrated into the dispatch console. Mr. Davis added that it may be easier to bring both the conventional and trunked system into a dispatch console so the dispatcher can patch the systems together on demand.

Mr. Richardson requested an explanation on patching between two trunked systems in an ISSI environment. Mr. Davis clarified that any patch over ISSI would only pass audio. Mr. Hengeveld added that ad hoc connections over an ISSI risk functionality loss.

Mr. Hoffman requested the SMEs discuss various additional characteristics of conventional analog with an ISSI. Mr. Davis mentioned that in this case, the use of talkgroups may be more infrequent, and it would be easier to bring the conventional channels into the infrastructure via something like a dispatch console or fixed system host. That would bring voice-to-voice functionality.

Mr. Hoffman requested the SMEs further elaborate on manual roaming and if the interface for end users is the same with or without an ISSI. The SMEs stated that manual roaming requires the users to physically change their radios to affiliate with the other system. They clarified that there is no radio ID to include for conventional radios. There is also no automatic roaming from a conventional to a trunked radio system. Control stations can fix this if they can be used to establish a path in common with an ISSI; however, this must be configured with care and well-understood.

Discussion progressed to what Iowa has done with providing PSAPs with consolettes/control stations that in many cases can be remotely steered to different talkgroups so a patch can be created from the dispatch console. The SMEs suggested that was a good approach and that it was a good solution to connect systems on-demand.

Mr. Hoffman then requested clarification on if multiple ISSIs would need to be purchased for multiple connections. The SMEs stated that configuration can be complicated. If a talkgroup is to be shared across an ISSI, it has to have a home system. Each home system has to have an ISSI, and routing for each talkgroup has to be established. Common management can help reduce the number of ISSIs required when systems with different system IDs but a common wide area controller network (WACN) ID is used.

Chief Walser requested clarification on licensing levels and costs. The SMEs stated that they are not in sales, so specific costs cannot be relayed. The added that this is all software-driven and licenses get added to the system. It includes application licenses for connections and software along with basic and additional functionality. Typically there is a connection fee for each talkpath and any necessary system capacity.

Chief Walser requested clarification on if talkpath licenses have to be predetermined. The SMEs stated that talkpaths connected over an ISSI are often considered pooled resources and can be configured in different ways.

Chief Walser requested clarification on the definition of a WACN to WACN connection between two systems and redundancy. The SMEs stated that this is done via IP interfaces, but starts branching away from what is in standards. They also added that redundancy typically comes with additional costs.

Mr. Hoffman requested further clarification on license costs and what occurs if all purchased licenses are used. The SMEs stated that this can get very complicated. However, once a user runs out of licenses, the additional talkgroups would likely get a rejected group call. In some instances the systems may wait for a path to become available. In some cases priority will allow some users to transmit before others. In any case, this capacity has to be thoroughly pre-planned.

Mr. Woten requested information on whether ISSIs could be used to connect to other statewide systems such as Missouri. The SMEs that ISSIs can connect external systems. This would be additional costs. For conventional users, this would require and additional conventional gateway such as a FSI.

At this point the meeting moved to open comments and discussion among attendees.

The discussion began with a statement by Mr. Hoffman that while an ISSI connection may be possible, the cost and complexity may outweigh any benefits. In addition, it was stated that the technology is geared towards trunked radio systems, and there are very few, if any, benefits for conventional systems.

Another point was made by Mr. Hoffman that Motorola and L3-Harris stated that in order to start an ISSI project, the agencies have to know exactly what the goals are with the project as there are several other ways to accomplish voice interoperability.

Mr. Maiers mentioned that if there are no real benefits for conventional users, the group may be better off recommending that any funding for communications be devoted to assisting local agencies updating their radio fleets for ISICS access.

Mr. Hoffman stated that while there may be a desire from interested parties to install an ISSI, but there have not been many efforts to define exactly what they want to accomplish. If it is just voice, the benefits of an ISSI connection are limited which makes the return on investment difficult to justify.

Mr. Maiers mentioned an aspect of the standards that L3-Harris and Motorola mentioned previously in the meeting that the standards for the ISSI are primarily focused on FDMA operation. Chief Walser then added to that with a question on how the ISSI allows for transcoding of the transmissions. If it downgrades to FDMA, that is a significant loading issue. In addition, Chief Walser mentioned information that Scott Wright from Connecticut shared with the group that not every radio is capable of utilizing an ISSI connection.

Sheriff Davis stated that the primary goal of interoperability is voice to voice.

Mr. Woten questioned if an ISSI connection between states may be a better alternative.

Sheriff Anderson mentioned that the main thing is voice to voice interoperability. Sheriff Anderson also questioned whether we have lost focus on what a LMR system is capable of, and if we should be focusing on how to connect to systems using equipment agencies already possess. Sheriff Anderson stated that giving LMR users pathways for voice interoperability is essential.

Chief Walser added that an ISSI is likely not a magic box that automatically solves interoperability issues since it is highly dependent on system configuration, and it may not be beneficial to make assumptions on what it is capable of.

Sheriff Anderson added that the group needs to focus on the direction for users, and simplicity in a complex issue is essential. Changing channels on radios or updating radios may be the simplest.

Chief Walser added that it is important to get information from the technicians and SMEs as opposed to other sources. Groups such as sales may not know much outside of their circle which can lead to incomplete information being relayed to users since brand-specific representatives may give general "advice" and guidance on their respective branded solution which may not be a holistic approach. It is recommended that agencies/end users seek professional guidance from communications consultants that can present the "big picture" and not a one-brand solution.

Sheriff Anderson that it may be best for the group to develop a list of items for local agencies to do in order to accomplish interoperability. This may help avoid complaints and give guidance on policy vs technology when it comes to interoperability. Sheriff Anderson also re-iterated that costs for local agencies need to be considered.

Mr. Maiers asked Sheriff Anderson if the ISICS Standard on subscriber radios should be updated to reflect his points since the Standards Working Group was concerned about being too specific with subscriber radio requirements. Sheriff Anderson summarized his thoughts by stated that efforts need to be made to help people figure out what they want before they buy equipment, and that the focus should be on voice.

Mr. Hoffman acknowledged that RICs are important in discussing interoperability and relaying information.

Mr. Maiers asked the group if it was time to being focusing on the final work products. The members requested a short summary of notes and a longer report.

The meeting adjourned at approximately 1535 CDT.

Conference line opened up at 1245 CDT.
Meeting Commenced at 1305 CDT.
Present in person: District Chief Curtis "Wally" Walser, Chris Maiers

Present on the phone: Curt Woten, Terry McClannahan, Sheriff Chad Leonard, Chris Jasper, Sergeant Corey Trucke, Dan Rammelsberg

Absent: Jason Study, Sheriff Rob Rotter, Brian Hamman, Sheriff Chad Leonard, Chief Dennis McDaniel, Sheriff Gary Anderson, Jason Hoffman, Scott Richardson, Sheriff Keith Davis

Chris Maiers started the meeting at 1305 with a role call and expression of thanks for those able to attend the meeting.

Mr. Maiers presented the last meeting minutes from the June Shared Systems Study Group (SSSG). He requested the members review them and to voice any concerns related to topics in the minutes related to the inter-RF subsystem interface (ISSI) and/or console subsystem interface (CSSI). No comments were offered.

Mr. Maiers then opened the meeting for discussion on what was previous presented to the SSSG by the various subject matter experts.

The SSSG then moved to a cursory review of the *SSSG Draft Final Report to the ISICSB*. Initial feedback on the document was generally positive, and that it was a good start.

At that point, the SSSG moved to looking at the various recommendations from the group that should be in the *SSSG Draft Final Report to the ISICSB*. The recommendations made by and agreed upon by the SSSG include:
- Do not use the ISSI at this time for connecting land mobile radio (LMR) systems
   - Not enough has changed at this time
   - Not all radios can utilize an ISSI
       - Several makes and models of radios that can access P25 trunked radio systems but not an ISSI are actively being used in Iowa
   - May require re-evaluation in the future once specific feature sets are working or a specific amount of time has passed
       - SWIC should maintain awareness of the progression of ISSI and bring recommendations forward as necessary
- Program subscriber radios to access multiple systems—trunked and conventional
- Find funding/assistance for agencies to access ISICS that don't already have access
   - Draw up a playbook to help agencies get a connection based on several different known configurations and expected costs
       - Update ISICS subscriber standards with more examples
       - Demonstrating how various PSAPs have integrated consolettes/control stations

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Shared Systems Study Group (SSSG)
Meeting Minutes
July 30, 2020 at 1300
Location: Fire Marshall's Office, Conference
Line &
GoToMeeting

- ▪
    - ▪ Demonstrating how various agencies have used mobile and portable radios along with scanners
    - ▪ Showcasing various policies on the use of ISICS with disparate system equipment
- • Avoid specific mandates to respect home rule
- • More investigation and work on improving interstate interoperability
- • Discuss usage and training between agencies on the interoperable talkgroups on ISICS.
    - o ISICSB should facilitate more training

Mr. Maiers then opened the SSSG meeting for open comment. Chief Walser stated that it may be beneficial for the group to continue to meet after the document is submitted to the ISICSB to go over additional recommendations for locals to connect to ISICS for interoperability and answer questions related to:
- • Additional control stations for PSAPs
- • How to find and utilize a consultant vs vendor for advice
- • RFP advice or guidance.

Chief Walser acknowledged that the additional work may be a separate document.

The meeting adjourned at approximately 1440 CDT.

Conference line opened up at approximately 1250 CDT.
Meeting Commenced at 1305 CDT.
Present in person: Curt Woten

Present on the phone: Terry McClannahan, Curtis Walser, Sheriff Anderson, Brian Hamman, Dan Rammelsburg, Curt Woten, Hollie Davidson, Chris Jasper, Scott Richardson, Jason Hoffman, Chief McDaniel

Absent: Jason Study, Sheriff Rob Rotter, Sheriff Chad Leonard, Sheriff Keith Davis, Sgt. Trucke

Chris Maiers started the meeting at 1305 with a role call and expression of thanks for those able to attend the meeting.

Mr. Maiers presented the last meeting minutes from the July Shared Systems Study Group (SSSG). He requested the members review them and to voice any concerns related to topics in the minutes related to the inter-RF subsystem interface (ISSI) and/or console subsystem interface (CSSI). No comments were offered, and the minutes were approved.

The SSSG then moved on to further editing the final report. The Executive Summary was edited first. Mr. Maiers discussed changes to the document and the group made additional edits and accepted the changes.

The SSSG began editing the main body of the document starting with the suggested edits from the July meeting. The editing then proceeded to the recommendations.

Once the editing was completed, Mr. Maiers asked the members present if they supported the document in its current form. All members present supported the document.

The meeting adjourned at approximately 1422 CDT.